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Valentine et al.

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(54) **SYSTEM AND METHOD FOR BRIDGING AN EMERGENCY CALL WITH AN OPTIMIZED SATELLITE CALL**

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(52) **U.S. Cl.** **455/404**; 455/416; 455/427; 455/520; 455/521; 455/560

(58) **Field of Search** 455/404, 416, 455/426, 427, 428, 445, 461, 12.1, 518, 519, 520, 521, 552, 553, 558, 560; 370/260, 261, 316

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,896,565 A * 4/1999 Miller 455/404
6,038,438 A * 3/2000 Beeson et al. 455/404
6,185,430 B1 * 2/2001 Yee et al. 455/519
6,240,285 B1 * 5/2001 Blum et al. 455/404

* cited by examiner

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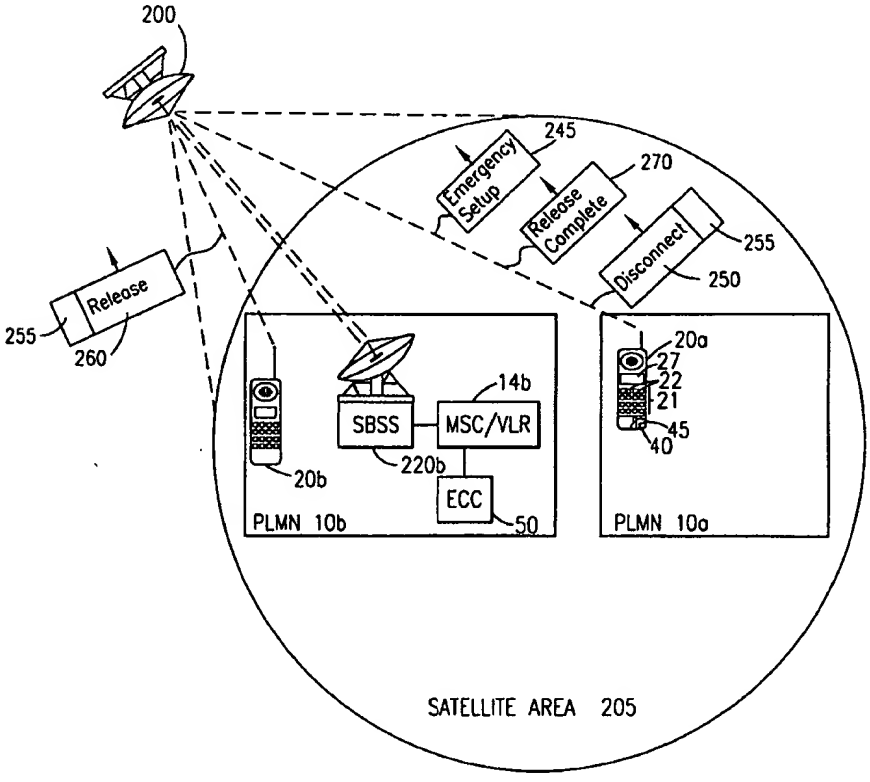
(57) **ABSTRACT**

A telecommunications system and method is disclosed for allowing a mobile station involved in a single-hop satellite call to complete a conference emergency call. One of the mobile stations involved in the single-hop satellite call activates an emergency call feature, which triggers one or both of the mobile stations to perform a call release and call re-establishment procedure. When one or both of the mobile stations performs call re-establishment, the call is marked as an Emergency Call to prevent the mobile stations from being reconnected in a single-hop call. After re-establishment, the mobile station that activated the emergency call feature transmits an Emergency Setup message to the MSC/VLR, which initiates a call connection to the Emergency Call Center (ECC). Once the MSC/VLR completes the call to the ECC, the MSC/VLR bridges all parties together in a conference call.

27 Claims, 6 Drawing Sheets



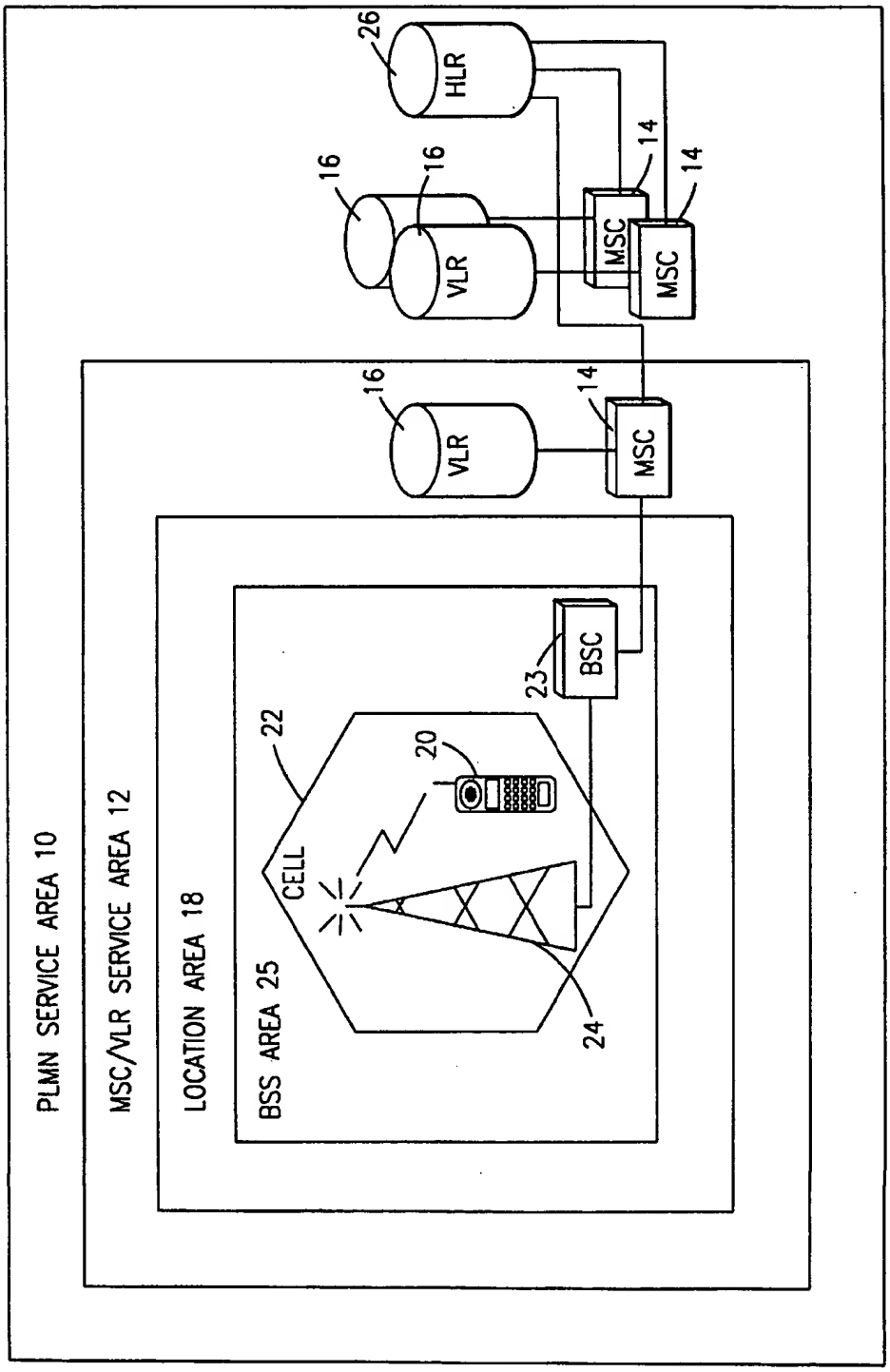

PLMN SERVICE AREA 10
MSC/VLR SERVICE AREA 12
LOCATION AREA 18
BSS AREA 25
CELL
HLR
VLR
VLR
MSC
MSC
MSC
BSC
16
16
16
14
14
14
20
22
23
24
26

FIG. 1

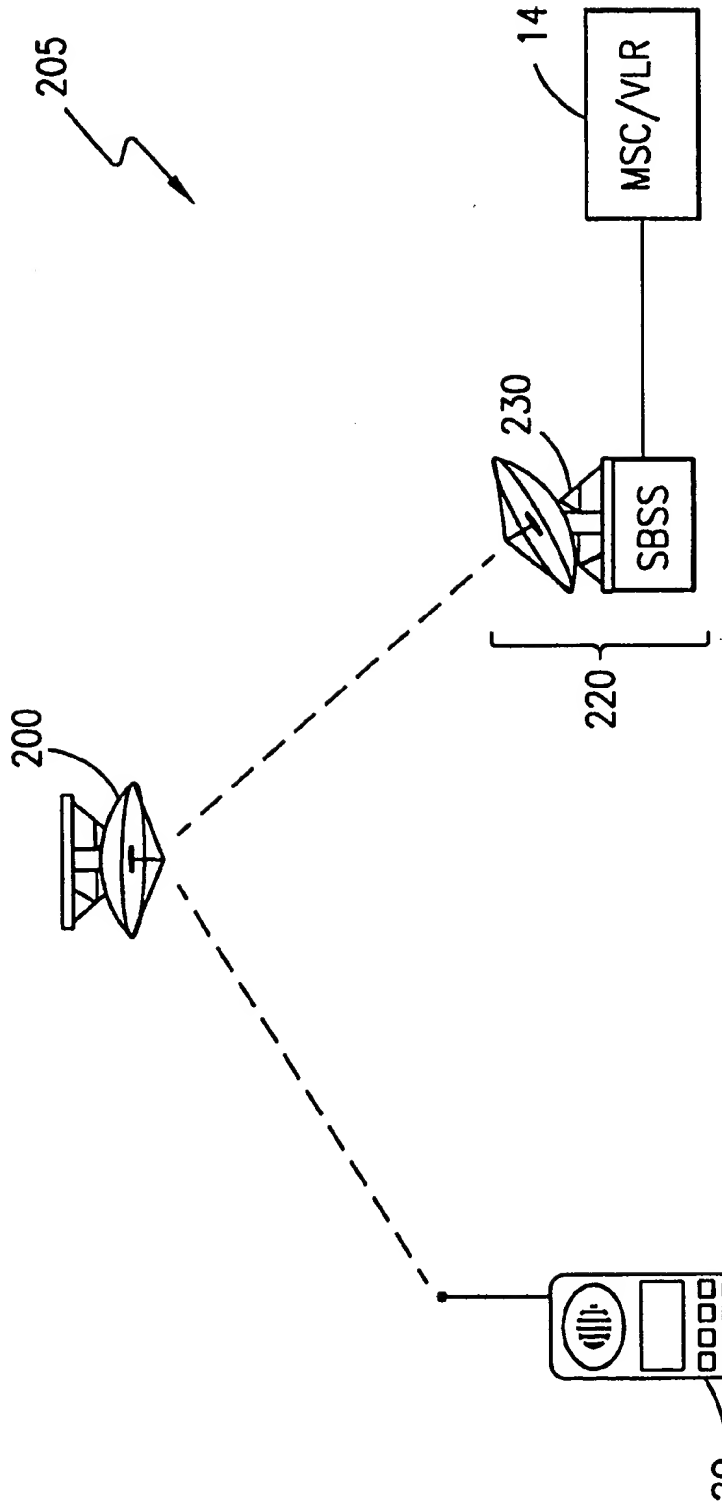


FIG. 2

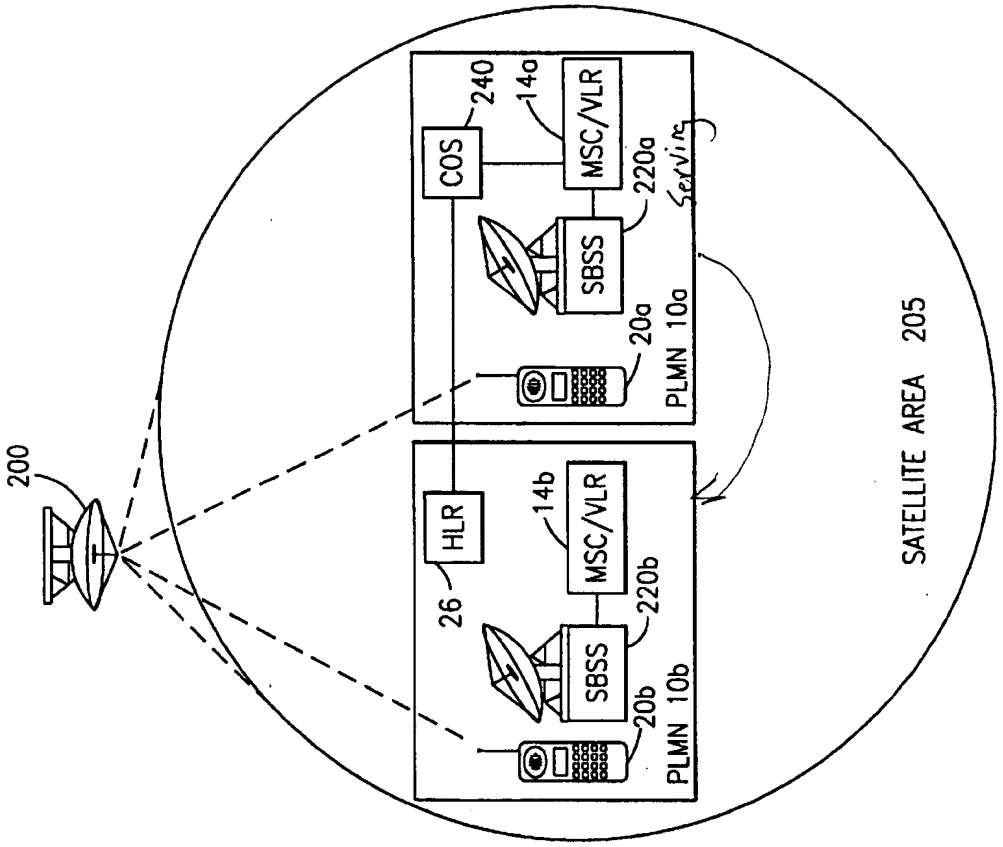

200
SATELLITE AREA 205
PLMN 10a
COS
240
14a
MSC/VLR
220a
SBSS
20a
PLMN 10b
HLR
26
14b
MSC/VLR
220b
SBSS
20b

FIG. 3

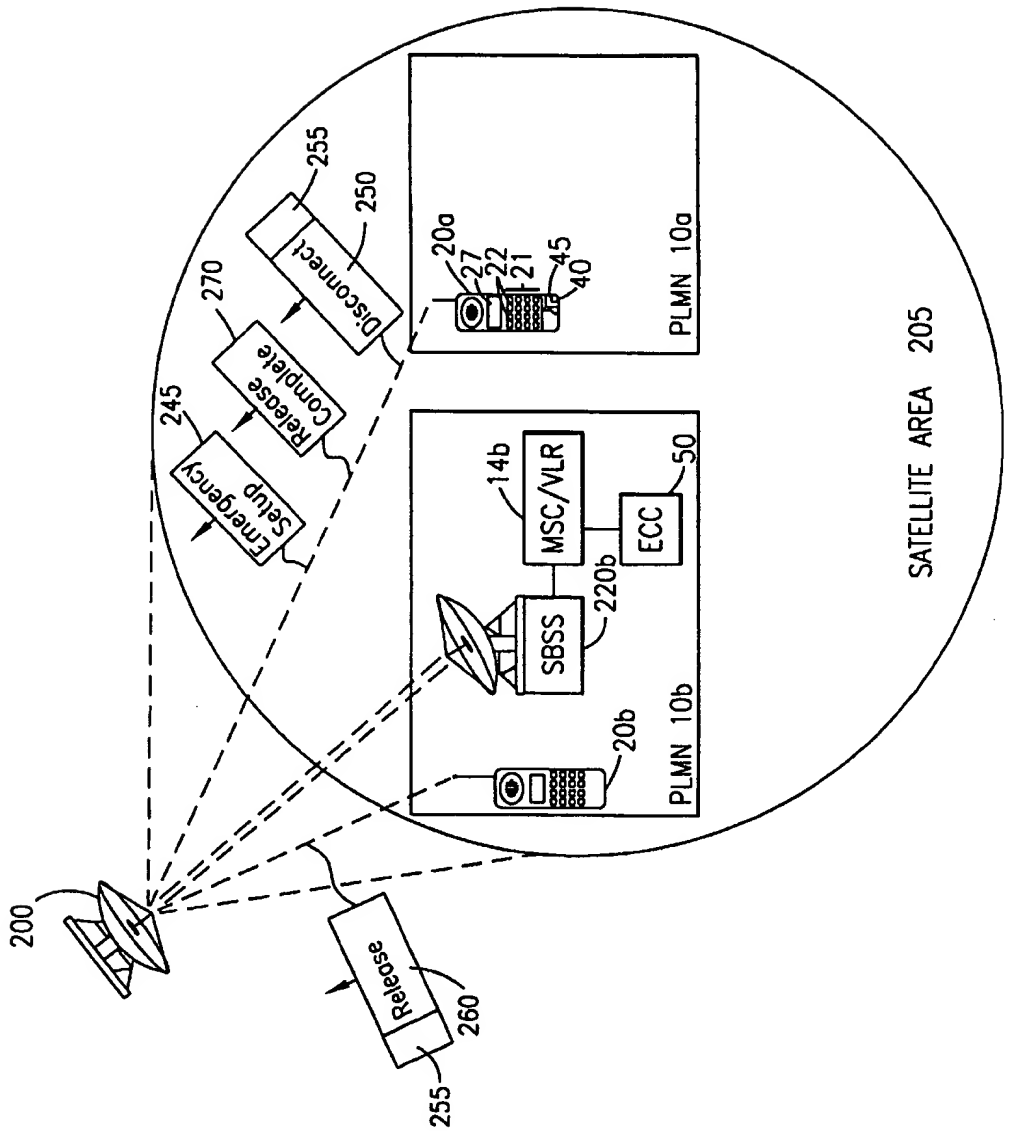

SATELLITE AREA 205
PLMN 10a
PLMN 10b
20a
27
22
21
45
40
20b
14b
MSC/VLR
ECC
50
SBSS
220b
200
255
250
Disconnect
270
Release Complete
245
Emergency Setup
Release
260
255

FIG. 4

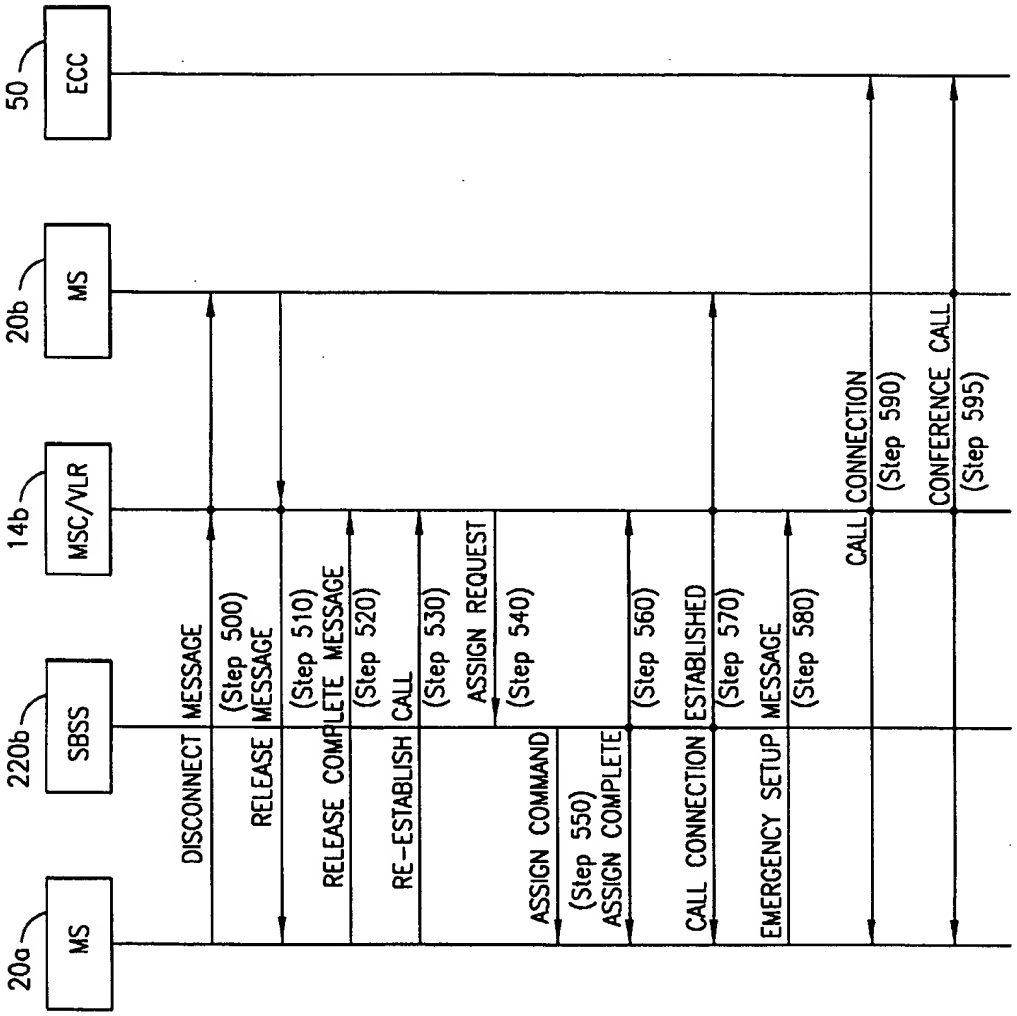

20a MS
220b SBSS
14b MSC/VLR
20b MS
50 ECC
DISCONNECT MESSAGE
(Step 500)
RELEASE MESSAGE
(Step 510)
RELEASE COMPLETE MESSAGE
(Step 520)
RE-ESTABLISH CALL
(Step 530)
ASSIGN REQUEST
(Step 540)
ASSIGN COMMAND
(Step 550)
ASSIGN COMPLETE
(Step 560)
CALL CONNECTION ESTABLISHED
(Step 570)
EMERGENCY SETUP MESSAGE
(Step 580)
CALL CONNECTION
(Step 590)
CONFERENCE CALL
(Step 595)

FIG. 5

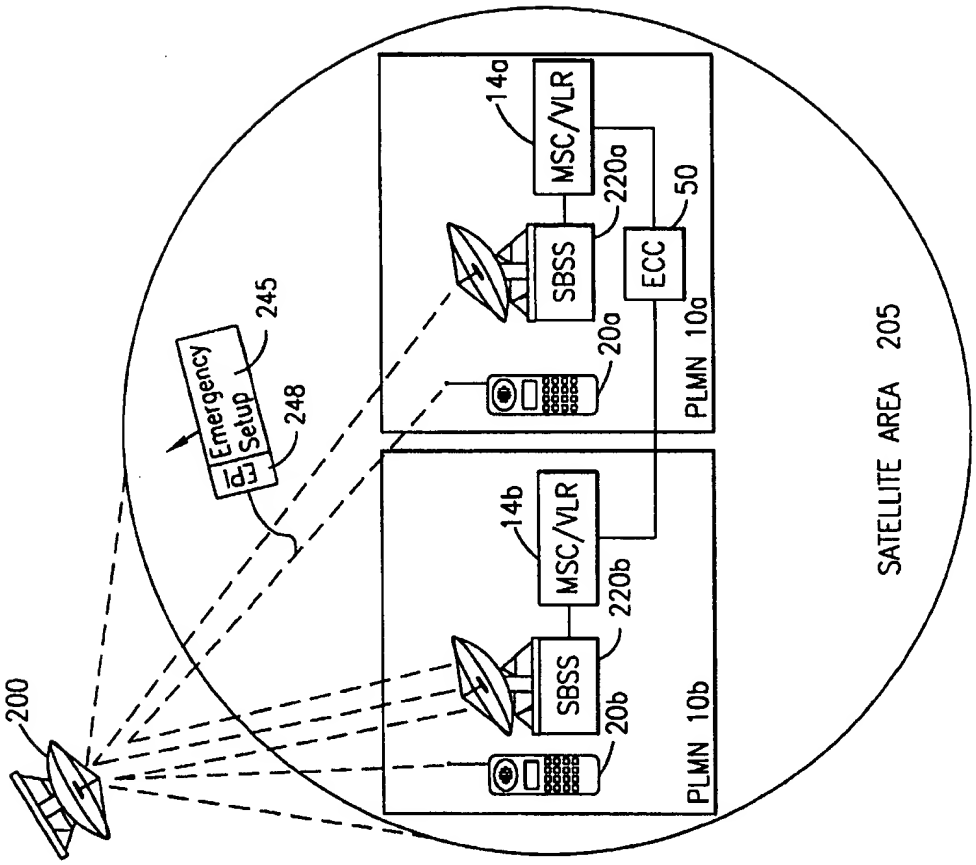

200
245
Emergency Setup
248
14a
MSC/VLR
220a
SBSS
20a
50
ECC
PLMN 10a
14b
MSC/VLR
220b
SBSS
20b
PLMN 10b
SATELLITE AREA 205

FIG. 6

SYSTEM AND METHOD FOR BRIDGING AN EMERGENCY CALL WITH AN OPTIMIZED SATELLITE CALL

BACKGROUND OF THE PRESENT INVENTION

FIELD OF THE INVENTION

The present invention relates generally to telecommunications systems and methods for optimizing calls in a satellite network, and specifically to placing emergency calls within a satellite network.

BACKGROUND AND OBJECTS OF THE PRESENT INVENTION

Cellular telecommunications is one of the fastest growing and most demanding telecommunications applications. Today it represents a large and continuously increasing percentage of all new telephone subscriptions around the world. A standardization group, European Telecommunications Standards Institute (ETSI), was established in 1982 to formulate the specifications for the Global System for Mobile Communication (GSM) digital mobile cellular radio system.

With reference now to FIG. **1** of the drawings, there is illustrated a GSM Public Land Mobile Network (PLMN), such as cellular network **10**, which in turn is composed of a plurality of areas **12**, each with a Mobile Switching Center (MSC) **14** and a Visitor Location Register (VLR) **16** therein. The MSC/VLR areas **12**, in turn, include a plurality of Location Areas (LA) **18**, which are defined as that part of a given MSC/VLR area **12** in which a mobile station (MS) **20** may move freely without having to send update location information to the MSC/VLR **14/16** that controls the LA **18**. Each Location Area **12** is divided into a number of cells **22**. Mobile Station (MS) **20** is the physical equipment, e.g., a car phone or other portable phone, used by mobile subscribers to communicate with the cellular network **10**, each other, and users outside the subscribed network, both wireline and wireless.

The MSC **14** is in communication with at least one Base Station Controller (BSC) **23**, which, in turn, is in contact with at least one Base Transceiver Station (BTS) **24**. The BTS is the physical equipment, illustrated for simplicity as a radio tower, that provides radio coverage to the geographical part of the cell **22** for which it is responsible. It should be understood that the BSC **23** may be connected to several BTS's **24**, and may be implemented as a stand-alone node or integrated with the MSC **14**. In either event, the BSC **23** and BTS **24** components, as a whole, are generally referred to as a Base Station System (BSS) **25**.

With further reference to FIG. **1**, the PLMN Service Area or cellular network **10** includes a Home Location Register (HLR) **26**, which is a database maintaining all subscriber information, e.g., user profiles, current location information, International Mobile Subscriber Identity (IMSI) numbers, and other administrative information. The HLR **26** may be co-located with a given MSC **14**, integrated with the MSC **14**, or alternatively can service multiple MSCs **14**, the latter of which is illustrated in FIG. **1**.

The VLR **16** is a database containing information about all of the MS's **20** currently located within the MSC/VLR area **12**. If an MS **20** roams into a new MSC/VLR area **12**, the VLR **16** connected to that MSC **14** will request data about that MS **20** from the HLR database **26** (simultaneously informing the HLR **26** about the current location of the MS **20**). Accordingly, if the user of the MS **20** then wants to make a call, the local VLR **16** will have the requisite identification information without having to reinterrogate the HLR **26**. In the aforedescribed manner, the VLR and HLR databases **16** and **26**, respectively, contain various subscriber information associated with a given MS **20**.

It should be understood that the aforementioned system **10**, illustrated in FIG. **1**, is a terrestrially-based system. In addition to the terrestrially-based systems, there are a number of satellite systems, which work together with the terrestrially-based systems to provide cellular telecommunications to a wider network of subscribers. This is due to the fact that the high altitude of the satellite makes the satellite visible (from a radio perspective) from a wider area on the earth. The higher the satellite, the larger the area that the satellite can communicate with.

Within a satellite-based network **205**, as shown in FIG. **2** of the drawings, a system of geostationary satellites **200** in orbit are used to provide communication between MS's **20** and a satellite-adapted Base Station System (SBSS) **220**, which is connected to an integrated Mobile Switching Center/Visitor Location Register (MSC/VLR) (hereinafter referred to collectively as reference number **14**). The MS **20** communicates via one of the satellites **200** using a radio air interface. The satellite **200** in turn communicates with one or more SBSSs **220**, which consist of equipment for communicating with the satellites **200** and through the satellites **200** to the MS's **20**. The antennae and satellite tracking part of the system is the Radio Frequency Terminal (RFT) subsystem **230**, which also provides for the connection of the communication path to the satellite **200**.

In such satellite networks **205** using geostationary satellites **200**, the coverage area for a satellite **200** can be (and usually is) very large. This area can be served by a number of MSC/VLRs **14** which are connected to Public Switched Telephone Networks (PSTNs) (wireline networks), PLMNs (cellular networks) and each other. The terrestrial interconnections (trunk circuits) to these MSC/VLRs **14** are expensive to install and maintain, especially in comparison to handling the traffic over the satellite **200**. Since the distances within the area served by the satellite(s) **200** are typically very large, the costs for these circuits can be enormous. In particular, the costs can be considerable if the circuits must cross remote areas or oceans.

Therefore, calls within a geostationary satellite network **205** can be optimized such that a subscriber is reallocated to the MSC/VLR **14** that is the most optimal for a given call. For example, for calls from a calling MS **20** to another MS **20** within the satellite network **205**, the calling MS **20** typically re-registers in the MSC/VLR **14** of the called MS **20**. In this way, it is possible to make the connection directly over the satellite **200**, avoiding the additional delay caused by a double satellite-hop. Thus, only one bi-directional path is required (MS-satellite-MS) instead of two (MS-satellite-SBSS-satellite-MS). However, when an MS **20** to MS **20** call is optimized, it is currently not possible for either MS **20** to establish an emergency call in parallel to the existing single-hop call. Thus, if one of the MS's **20** wants to establish an emergency call, the single-hop call must first be disconnected, and only one of the MS's can then be connected to the Emergency Call Center (ECC).

It is, therefore, an object of the present invention to allow an MS to complete an emergency call in parallel to a single-hop satellite call.

SUMMARY OF THE INVENTION

The present invention is directed to telecommunications systems and methods for allowing a mobile station involved

in a single-hop satellite call to complete an emergency call. One of the mobile stations involved in the single-hop satellite call activates an emergency call feature, which triggers one or both of the mobile stations to perform a call release and call re-establishment procedure. When one or both of the mobile stations performs call re-establishment, the call is marked as an Emergency Call to prevent the mobile stations from being reconnected in a single-hop call. After re-establishment, the mobile station that activated the emergency call feature transmits an Emergency Setup message to the MSC/VLR, which initiates a call connection to the Emergency Call Center (ECC) . Once the MSC/VLR completes the call to the ECC, the MSC/VLR bridges all parties together in a conference call.

BRIEF DESCRIPTION OF THE DRAWINGS

The disclosed invention will be described with reference to the accompanying drawings, which show important sample embodiments of the invention and which are incorporated in the specification hereof by reference, wherein:

FIG. **1** is block diagram of a terrestrially-based wireless telecommunications system;

FIG. **2** is a block diagram of a satellite telecommunications system;

FIG. **3** illustrates optimization of a call between mobile stations in a satellite network;

FIG. **4** illustrates establishing an emergency call in parallel to an existing optimized satellite call in accordance with preferred embodiments of the present invention;

FIG. **5** illustrates the steps for establishing the parallel emergency call shown in FIG. **4** of the drawings; and

FIG. **6** illustrates establishing an emergency call to the correct Emergency Call Center in parallel to an existing optimized satellite call in accordance with embodiments of the present invention.

DETAILED DESCRIPTION OF THE PRESENTLY PREFERRED EXEMPLARY EMBODIMENTS

The numerous innovative teachings of the present application will be described with particular reference to the presently preferred exemplary embodiments. However, it should be understood that this class of embodiments provides only a few examples of the many advantageous uses of the innovative teachings herein. In general, statements made in the specification of the present application do not necessarily delimit any of the various claimed inventions. Moreover, some statements may apply to some inventive features but not to others.

With reference now to FIG. **3** of the drawings, when a calling Mobile Station (MS) **20***a* calls a called MS **20***b* within the area **205** visible to a satellite **200**, a satellite-adapted Base Station System (SBSS) **220***a* serving the PLMN area **10***a* that the calling MS **20***a* is located in receives the Called Party Number (CPN) from the calling MS **20***a*. Thereafter, the SBSS **220***a* sends the CPN to a serving Mobile Switching Center/Visitor Location Register (MSC/VLR) **14***a*. If the serving MSC/VLR **14***a* determines that the CPN is not a number registered within the serving MSC/VLR **14***a*, the digit string for the CPN is sent to a Call Optimization Server (COS) **240** for pre-analysis. The COS **240** determines that the call is a MS **20***a* to MS **20***b* call, queries a Home Location Register (HLR) **26** of the called MS **20***b* for the current location of the called MS **20***b*, and assigns a transaction identifier to be used for making the connection between the two MSs (**20**a and **20***b*).

Thereafter, the COS **240** sends an Unstructured Supplementary Service Data (USSD) string to the calling MS **20***a*, which requests the calling MS **20***a* to re-register itself on an MSC/VLR **14***b* serving the called MS **20***b* via an SBSS **220***b* serving the called MS **20***b*. The USSD string also includes the transaction identifier. In this way, satellite resources can be conserved by performing the connection for these calls using only the satellite **200**, e.g., only one bi-directional path is required (MS-satellite-MS) instead of two (MS-satellite-SBSS-satellite-MS). This one bi-directional path connection is commonly known as a single-hop satellite call, whereas the two bi-directional path connection is referred to as a double-hop satellite call.

After re-registration in the desired MSC/VLR **14***b*, normal call setup procedures take place, with the addition of an indicator that this is a MS **20***a* to MS **20***b* call and the transaction identifier. The MS **20***a* to MS **20***b* call indicator is used to disable functions requiring terrestrial switch connections. The transaction identifier is used when channel assignments are done and the connection is made to ensure that the right channels can be connected with the satellite **200**. Once the connection is made through the satellite **200**, the transaction identifier is released.

However, when an MS **20***a* to MS **20***b* call is optimized in the aforementioned manner, it is not possible for either MS **20***a* or **20***b* to place an emergency call in parallel to the optimized call. Therefore, as shown in FIG. **4** of the drawings, and in accordance with one preferred embodiment of the present invention, in order for either MS **20***a* or **20***b* to place an emergency call in parallel to an existing single-hop satellite call, one or both of the MSs **20** involved in the single-hop call must have an emergency call feature **40** associated therewith, which gives the MS **20***a* and/or **20***b* the ability to establish an emergency call in parallel to a single-hop call. This emergency call feature **40** is preferably stored in a memory **45**, such as a Subscriber Identity Module (SIM) card, in the MS **20***a* or **20***b*.

In a preferred embodiment, if both MSs **20***a* and **20***b* have the emergency call feature **40**, the parallel emergency call can be established by one of the MSs **20***a* or **20***b* activating their emergency call feature **40**. This feature **40** can be activated by pressing one or a sequence of emergency keys on a keypad **21** of the MS **20** or by using function keys **22** on the MS **20** to select the emergency call feature **40** from a menu of services displayed on a display **27** of the MS **20**. Activating the emergency call feature **40** triggers both MSs **20***a* and **20***b* to perform a call release and call re-establishment procedure. After the call release, and during the call re-establishment procedure, the call is marked as an emergency call so that the MSs **20***a* and **20***b* are not reconnected again in a single-hop call. After re-establishment, the activating MS **20***a* or **20***b* transmits an Emergency Setup message **245** to the optimal MSC/VLR **14***b*, which initiates a connection to an Emergency Call Center (ECC) **50** within the area **10***a* served by the optimal MSC/VLR **14***b*. When the call is completed to the ECC **50**, all parties **20***a*, **20***b* and **50** are bridged together.

A sample call release and call re-establishment procedure is shown in FIG. **5** of the drawings. Upon activation of the emergency call feature **40**, MS **20***a* transmits a DISCONNECT message **250** to the other MS **20***b*, which is relayed to the optimal MSC/VLR **14***b* via satellite **200** (step **500**). Upon receipt of the DISCONNECT message **250**, MS **20***b* transmits a RELEASE message **260** to the other MS **20***a*, which is also relayed to the MSC/VLR **14***b* via satellite **200** (step **510**). To release the call, MS **20***a* transmits a RELEASE COMPLETE message **270** to the MSC/VLR **14***b* via satellite **200** (step **520**). When the call is released, both MS's **20***a* and **20***b* will experience an interruption in voice communication until the call connection is re-established.

An indication **255** that each MS **20***a* and **20***b* has the emergency call feature **40** can be included in a separate message or as a part of the DISCONNECT **250** and RELEASE **260** messages, respectively. In this case, both MSs **20***a* and **20***b* have the emergency call feature **40**, and therefore, both MSs **20***a* and **20***b* perform the call re-establishment procedure. The call re-establishment procedure is similar to normal GSM call re-establishment procedures, with minor modifications to allow for quicker call connection. Only the call re-establishment procedure for MS **20***a* is shown in FIG. **5** of the drawings. However, it should be understood that the call re-establishment procedure for MS **20***b* mirrors that of MS **20***a*. To begin call re-establishment, after the single-hop satellite call has been released, MS **20***a* automatically transmits a re-establishment call setup message with an indication that the call should not be a single-hop call to the optimal MSC/VLR **14***b* via satellite **200** (step **530**). Thereafter, the optimal MSC/VLR **14***b* requests the SBSS **220***b* associated with the optimal MSC/VLR **14***b* to assign a traffic channel to the MS **20***a* (step **540**). The SBSS **220***a* assigns a channel and instructs the MS **20***a* to activate the traffic channel (step **550**). Upon activation, the MS **20***a* transmits an assignment complete message to the MSC/VLR **14***b* (step **560**). Once the MSC/VLR **14***b* has received the assignment complete message from both MSs **20***a* and **20***b*, a double-hop satellite call connection is established (step **560**) between MS **20***a* and MS **20***b*. The double-hop satellite call connection is from MS **20***a*, through the satellite **200**, SBSS **220***b* and MSC/VLR **14***b*, back through the SBSS **220***b*, and to MS **20***b* via satellite **200**. It should be understood that the SBSS **220** used by MS **20***a* and **20***b* can be different.

Once the original call has been re-established (step **570**), the original double-hop satellite call is put on hold, while the connection to the ECC **50** is initiated. It should be noted that the ECC **50** connection may be initiated as soon as MS **20***a* finishes the call re-establishment procedure. For example, once MS **20***a* transmits the Assignment Complete message (step **560**), MS **20***a* can transmit the ~~Emergency Setup message **245**~~ to the optimal MSC/VLR **14***b* (step **580**). The MSC/VLR **14***b* establishes a call connection between the ECC **50** and MS **20***a* (step **590**). After the call between MS **20***a* and MS **20***b* is completed, and the call between MS **20***a* and the ECC **50** is completed, the MSC/VLR **14***b* can conference all parties together in a three-way call through a CCD device (conference circuit device) of the type known in the art within the MSC/VLR **14***b* (step **595**).

3-way calling

In an alternative embodiment, if MS **20***b* does not support the emergency call feature, e.g., the indication **555** is not included in the RELEASE message **560**, the MSC/VLR **14***b* can either establish a normal emergency call between MS **20***a* and the ECC **50** (without conferencing MS **20***b*) or, after MS **20***a* has completed call re-establishment, the MSC/VLR **14***b* can page MS **20***b* and establish a call connection between MS **20***a* and MS **20***b*. The decision to conference MS **20***b* can be made by either MS **20***a* or the MSC/VLR **14***b*. For example, when MS **20***a* receives the RELEASE message **560** without the indication **555** from MS **20***b*, MS **20***a* can decide to release the call and transmit the Emergency Setup message **545** without initiating the call re-establishment. Alternatively, MS **20***a* can attempt to re-establish a double-hop satellite call connection with MS **20***b* by initiating the call re-establishment procedure. If MS **20***a* performs the call re-establishment procedure, the MSC/VLR **14***b* can decide to either page MS **20***b* and attempt to complete the call or not allow MS **20***a* to re-establish a call connection with MS **20***b*. If the MSC/VLR **14***b* chooses the latter, the MSC/VLR **14***b* preferably sends a message (not shown), such as a Short Message Service (SMS) message or Unstructured Supplementary Service Data (USSD), to MS **20***a* informing MS **20***a* that the call to MS **20***b* cannot be re-established.

In some cases, if the MSC/VLR **14***b* connects the emergency call to the ECC **50** in the PLMN **10***b* of the optimal MSC/VLR **14***b*, that ECC **50** may not be the correct ECC **50** for the type of emergency involved. For example, since MS **20***a* initiates the emergency call, the ECC **50** in PLMN **10***b* may be hundreds of miles away, and unable to render the appropriate emergency aid effectively.

Therefore, with reference now to FIG. **6** of the drawings, in an alternative embodiment, when MS **20***a* activates the emergency call feature **40**, the mobile subscriber associated with MS **20***a* can indicate whether the emergency relates to MS **20***a* or MS **20***b*. This emergency party information **248** can be included with the Emergency Setup message **245** sent by MS **20***a*. Thus, when the optimal MSC/VLR **14***b* receives the Emergency Setup message **245** and emergency party information **248**, the MSC/VLR **14***b* can determine the correct ECC **50** to connect the emergency call to.

For example, if MS **20***a* is the emergency party, the optimal MSC/VLR **14***b* can determine the PLMN **10***a* of MS **20***a*, and route the call to the ECC **50** within PLMN **10***a*. It should be understood that each PLMN **10***a* and/or **10***b* can contain more than one ECC **50**, and therefore, the correct ECC **50** can be determined by ascertaining the Location Area, MSC/VLR area, cell or geographical location, e.g., X, Y coordinates, of the MS **20***a*. The connection to the correct ECC **50** can be completed directly from the optimal MSC/VLR **14***b* over trunk lines or through the SBSS **220***a* and MSC/VLR **14***a* within the PLMN **10***a* of MS **20***a* via satellite **200**.

As will be recognized by those skilled in the art, the innovative concepts described in the present application can be modified and varied over a wide range of applications. Accordingly, the scope of patented subject matter should not be limited to any of the specific exemplary teachings discussed, but is instead defined by the following claims.

What is claimed is:

1. A satellite network for establishing an emergency call in parallel to an existing satellite call, comprising:

first and second mobile stations involved in a single-hop satellite call via a satellite, said first mobile station including an emergency call feature for activating said emergency call; and

a mobile switching center in wireless communication with said first and second mobile stations via said satellite, said mobile switching center disconnecting said single-hop satellite call, re-establishing a double-hop satellite call between said first and second mobile stations and establishing an emergency call in parallel to said double-hop satellite call in response to activation of said emergency call feature.

2. The satellite network of claim **1**, wherein said first mobile station further comprises a memory for storing said emergency call feature.

3. The satellite network of claim **2**, wherein said memory is a Subscriber Identity Module.

4. The satellite network of claim **1**, wherein said first mobile station transmits a disconnect message to said second mobile station via said satellite, said disconnect message being detected by said mobile switching center.

5. The satellite network of claim **4**, wherein said disconnect message includes an indication that said first mobile station has said emergency call feature associated therewith.

6. The satellite network of claim **4**, wherein said second mobile station transmits a release message to said first mobile station, said release message being detected by said mobile switching center.

7. The satellite network of claim **6**, wherein said release message includes an indication that said second mobile station has said emergency call feature associated therewith.

8. The satellite network of claim **7**, wherein said first and second mobile stations each perform a respective call re-establishment procedure to said mobile switching center substantially simultaneously.

9. The satellite network of claim **6**, wherein said first mobile station performs a call re-establishment procedure to said mobile switching center, said mobile switching center paging said second mobile station to establish said double-hop satellite call between said first and second mobile stations.

10. The satellite network of claim **1**, wherein said first mobile station transmits an emergency setup message to said mobile switching center to initiate connection of said emergency call.

11. The satellite network of claim **10**, further comprising an emergency call center, said emergency call being connected between said emergency call center and said first and second mobile stations.

12. The satellite network of claim **11**, wherein said emergency call center is located within an area served by said mobile switching center.

13. The satellite network of claim **11**, wherein said emergency call center is located within an area including an emergency party, said emergency party being said first or second mobile station.

14. The satellite network of claim **13**, wherein an identification of said emergency party is included within said emergency setup message, said mobile switching center connecting said emergency call to said emergency call center within said area of said emergency party.

15. The satellite network of claim **14**, wherein said mobile switching center connects said emergency call to said emergency call center via said satellite and an additional mobile switching center when said emergency call center is located within an area served by said additional mobile switching center.

16. A method for establishing an emergency call in parallel to an existing satellite call, comprising the steps of:

establishing a single-hop satellite call between first and second mobile stations via a satellite;

activating, by said first mobile station, an emergency call feature within said first mobile station;

releasing said single-hop satellite call;

re-establishing a double-hop satellite call between said first and second mobile stations; and

establishing an emergency call in parallel to said double-hop satellite call.

17. The method of claim **16**, wherein said step of releasing further comprises the step of:

transmitting a disconnect message from said first mobile station to said second mobile station via said satellite.

18. The method of claim **17**, wherein said step of releasing further comprises the steps of:

transmitting a release message from said second mobile station to said first mobile station; and

transmitting a release complete message from said first mobile station to a mobile switching center in wireless communication with said first and second mobile stations via said satellite.

19. The method of claim **18**, wherein said release message comprises an indication that said second mobile station has said emergency call feature associated therewith, said step of re-establishing further comprising the step of:

performing, by each said first and second mobile stations, a respective call re-establishment procedure to said mobile switching center substantially simultaneously.

20. The method of claim **18**, wherein said step of re-establishing further comprises the step of: performing, by said first mobile station, a call re-establishment procedure to said mobile switching center; and

paging, by said mobile switching center, said second mobile station to re-establish said double-hop satellite call between said first and second mobile stations.

21. The method of claim **16**, wherein said step of establishing said emergency call further comprises the step of:

transmitting an emergency setup message from said first mobile station to said mobile switching center; and

connecting said emergency call between an emergency call center and said first and second mobile stations.

22. The method of claim **21**, wherein said step of establishing said emergency call further comprises the step of:

transmitting an identification of an emergency party within said emergency setup message, said emergency party being said first or second mobile station; and

connecting said emergency call, by said mobile switching center, to said emergency call center located within an area associated with the location of said emergency party.

23. The method of claim **22**, wherein said step of connecting further comprises the step of:

connecting, by said mobile switching center, said emergency call to said emergency call center via said satellite and an additional mobile switching center when said emergency call center is located within an area served by said additional mobile switching center.

24. A method for establishing a conference emergency call by a first mobile station when said first mobile station is involved in a single-hop satellite call with a second mobile station via a satellite, comprising the steps of:

activating an emergency call feature on said first mobile station;

releasing said single-hop satellite call;

performing a call re-establishment procedure to a mobile switching center in wireless communication with said first and second mobile stations via said satellite to establish a double-hop satellite call between said first and second mobile stations; and

transmitting an emergency setup message to said mobile switching center to initiate connection of said emergency call between said first and second mobile stations and an emergency call center.

25. The method of claim 24, wherein said step of releasing further comprises the step of:

transmitting a disconnect message from said first mobile station to said second mobile station via said satellite.

26. The method of claim 25, wherein said step of releasing further comprises the step of:

transmitting a release complete message from said first mobile station to said mobile switching center via said satellite.

27. The method of claim 24, wherein said step of transmitting further comprises the step of:

transmitting an identification of an emergency party within said emergency setup message, said emergency party being said first or second mobile station, said emergency call center being located within an area associated with the location of said emergency party.

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